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Complete set of claims

1(Currently Amended). A positive bottom photoimageable antireflective coating composition which is capable of being developed in an aqueous alkaline developer and which is coated below a positive photoresist, where the antireflective coating composition comprises a photoacid generator and a polymer comprising at least one unit with an acid labile group and at least one unit with an absorbing chromophore, further where the absorbing chromophore is selected from hydrocarbon aromatic moieties with one ring and heterocyclic aromatic moieties with one ring.

2(Original). The composition according to claim 1 where the acid labile group is selected from -(CO)O-R, -O-R, -O(CO)O-R, $-C(CF_3)_2O$-R, $-C(CF_3)_2O$(CO)O-R and $-C(CF_3)_2$(COOR), where R is alkyl, cycloalkyl, substituted cycloalkyl, oxocyclohexyl, cyclic lactone, benzyl, substituted benzyl, alkoxy alkyl, acetoxy alkoxyoxy alkyl, tetrahydrofuranyl, methyl adamantyl, menthyl, tetrahydropyranyl and mevalonic lactone.

3(Currently Amended). The composition according to claim 1 where the absorbing chromophore is selected from ~~compounds containing hydrocarbon aromatic rings,~~ substituted and unsubstituted phenyl, ~~substituted and unsubstituted anthracyl, substituted and unsubstituted phenanthryl, substituted and unsubstituted naphthyl,~~ and substituted and unsubstituted heterocyclic aromatic rings containing heteroatoms selected from oxygen, nitrogen, sulfur, ~~or~~ and combinations thereof.

4(Canceled).

5(Currently Amended). The composition according to claim 1 where the polymer is selected from copolymers of 2-methyl-2-adamantyl methacrylate, mevalonic

lactone methacrylate, 3-hydroxy-1-adamantyl methacrylate, methacrylate ester of beta-hydroxy-gamma-butyrolactone, t-butyl nornyl carboxylate, t-butyl methyl adamantyl methacryate, t-butyl acrylate and t-butyl methacrylate; t-butoxy carbonyl oxy vinyl benzene, benzyl oxy carbonyl oxy vinyl benzene; ethoxy ethyl oxy vinyl benzene; trimethyl silyl ether of vinyl phenol, and 2-tris(trimethylsilyl)silyl ethyl ester of methyl methacrylate, with acrylic acid, methacrylic acid, vinyl alcohol, maleic anhydride, maleic acid, maleimide, N-methyl maleimide, N-hydroxymethyl acrylamide, N-vinyl pyrrolidinone, methyl methacrylate, butyl methacrylate, hydroxyethyl methacrylate and hydroxypropyl methacrylate, hydroxystyrene, styrene, acetoxystyrene, benzyl methacrylate, N-methyl maleimide, vinyl benzoate, vinyl 4-tert-butylbenzoate, ethylene glycol phenyl ether acrylate, phenoxypropyl acrylate, 2-hydroxy-3-phenoxypropyl acrylate, phenyl methacrylate, benzyl methacrylate, ~~9 anthraconylmethyl methacrylate, 9-vinylanthracene, 2 vinylnaphthalene,~~ N-vinylphthalimide, N-(3-hydroxy)phenyl methacrylamide, N-(3-hydroxy-4-hydroxycarbonylphenylazo)phenyl methacrylamide, N-(3-hydroxyl-4-ethoxycarbonylphenylazo)phenyl methacrylamide, N-(2,4-dinitrophenylaminophenyl) maleimide, 3-(4-acetoaminophenyl)azo-4-hydroxystyrene, 3-(4-ethoxycarbonylphenyl)azo-acetoacetoxy ethyl methacrylate, 3-(4-hydroxyphenyl)azo-acetoacetoxy ethyl methacrylate, tetrahydroammonium sulfate salt of 3-(4-sulfophenyl)azoacetoacetoxy ethyl methacrylate.

6(original). The composition according to claim 1 where the antireflective layer has a k value in the range of 0.1 to 1.0.

7(Canceled).

8(original). The composition according to claim 1 where the photoacid generator is sensitive in the range of 450 nm to 100 nm.

9(original). The composition according to claim 8 where the photoacid generator is sensitive at wavelengths selected from 436 nm, 365 nm, 248 nm, 193 nm and 157 nm.

10(Canceled).

11(original). A process for forming a positive image comprising:

a) providing a coating of the bottom photoimageable antireflective coating composition of claim 1 on a substrate;
b) providing a coating of a top photoresist layer over the bottom coating;
c) imagewise exposing the top and bottom layers to actinic radiation of same wavelength;
d) postexposure baking the substrate; and,
e) developing the top and bottom layers with an aqueous alkaline solution.

12(original). The process according to claim 11 where the antireflective coating is insoluble in the aqueous alkaline solution prior to the exposing step and becomes soluble prior to the developing step.

13(original). The process according to claim 11 where the aqueous alkaline solution comprises tetramethylammonium hydroxide.

14(original). The process according to claim 13 where the aqueous alkaline solution further comprises a surfactant.

15(Canceled).
16(Canceled).
17(Canceled).
18Canceled).

19(Canceled).

20(Canceled).
21(Canceled).
22(Canceled).

23(Canceled).

24(Canceled).
25(Canceled).
26(Canceled).
27(Canceled).

28(Canceled).

29(Canceled).

30(Canceled).

31(Canceled).

32(Canceled).
33(Canceled).

34(Canceled).

35(Canceled).
36(Canceled).
37(Canceled).
38(Canceled).
39(Canceled).
40(Canceled).
41(Canceled).
42(Canceled).
43(Canceled).
44(Canceled).
45(Canceled).
46(Canceled).
47(Canceled).

48(new). A positive bottom photoimageable antireflective coating composition which is capable of being developed in an aqueous alkaline developer and which is coated below a positive photoresist, where the antireflective coating composition comprises a photoacid generator and a polymer comprising at least one unit with an acid labile group and an absorbing chromophore.

49(new). The composition of claim 48 where the acid labile group is selected from -(CO)O-R, -O-R, -O(CO)O-R, $-C(CF_3)_2O$-R, $-C(CF_3)_2O(CO)O$-R and $-C(CF_3)_2(COOR)$, where R is alkyl, cycloalkyl, substituted cycloalkyl, oxocyclohexyl, cyclic lactone, benzyl, substituted benzyl, alkoxy alkyl, acetoxy alkoxyoxy alkyl, tetrahydrofuranyl, methyl adamantyl, menthyl, tetrahydropyranyl and mevalonic lactone.

50(new). The composition according to claim 48 where the absorbing chromophore is selected from compounds containing hydrocarbon aromatic rings, substituted and unsubstituted phenyl, substituted and unsubstituted anthracyl, substituted and unsubstituted phenanthryl, substituted and unsubstituted naphthyl, and substituted and unsubstituted heterocyclic aromatic rings containing heteroatoms selected from oxygen, nitrogen, sulfur, and combinations thereof.

51(new). The composition according to claim 1 where the antireflective layer has a k value in the range of 0.1 to 1.0.

52(new). The composition according to claim 1 where the photoacid generator is sensitive in the range of 450 nm to 100 nm.

53.(new). The composition according to claim 8 where the photoacid generator is sensitive at wavelengths selected from 436 nm, 365 nm, 248 nm, 193 nm and 157 nm.

54(new). A process for forming a positive image comprising:

b) providing a coating of the bottom photoimageable antireflective coating composition of claim 48 on a substrate;

b) providing a coating of a top photoresist layer over the bottom coating;

c) imagewise exposing the top and bottom layers to actinic radiation of same wavelength;

f) postexposure baking the substrate; and,

g) developing the top and bottom layers with an aqueous alkaline solution.

55(New) The composition according to claim 53 where the antireflective coating is substantially insoluble in a solvent of the top photoresist.

56(New) The composition according to claim 53 where the antireflective layer has a thickness less than the thickness of the photoresist.

57(New). The process according to claim 53 where the antireflective coating is insoluble in the aqueous alkaline solution prior to the exposing step and becomes soluble prior to the developing step.

58(New). The process according to claim 53 where the aqueous alkaline solution comprises tetramethylammonium hydroxide.

59(New). The process according to claim 53 where the aqueous alkaline solution further comprises a surfactant.